ORIGINAL RESEARCH

ENDOSKOPI COPY 2012; 20(1): 13-16

What is the consistency between the diagnoses of endoscopists and pathologists concerning gastroduodenal mucosa?

Üst gastrointestinal mukozayı değerlendirmede endoskopistler ve patologlar ne kadar uyumludur?

Elmas KASAP[1], Gökçen GÜNGÖR[2], Emine AYGÖR[2], Özlem Suade BADAK[2], Semin AYHAN[3], Hakan YÜCEYAR[1]

Departments of [1]Gastroenterology, [2]Internal Medicine and [3]Pathology, Celal Bayar University, School of Medicine, Manisa

Background/aims: *The aim of this study was to evaluate retrospectively the consistency of the diagnoses by endoscopists and pathologists, to determine whether the endoscopic diagnosis is adequate, and to compare the endoscopic and pathological diagnoses of Helicobacter pylori.* ***Materials and Methods:*** *1597 subjects who underwent an upper endoscopy and an endoscopic biopsy (antrum and corpus) were recruited retrospectively from Celal Bayar University Gastroenterology Department in Manisa, Turkey between January 2008 and January 2010.* ***Results:*** *The specificity was 86.8%, sensitivity 30.8%, positive predictive value 19.4%, and negative predictive value 92.4% between the endoscopically normal and pathologically normal cases. The specificity was 30.8% and sensitivity 85.3%, with a positive predictive value of 89.6% and a negative predictive value of 23.1% between gastritis shown endoscopically versus pathologically. The specificity was 99.1% and sensitivity 96.4%, with a positive predictive value of 84.3% and negative predictive value of 99.8%, between malignancy shown endoscopically versus pathologically. Helicobacter pylori was positive in 653 (40%) patients.* ***Conclusions:*** *Although the endoscopic and pathological diagnoses were compatible, especially when examining malignancy and gastritis, and despite the fact that the endoscopic evaluations of the upper gastrointestinal system were deemed to be normal, a biopsy is still recommended.*

Key words: *Endoscopic diagnosis, pathological diagnosis, Helicobacter pylori*

Giriş ve Amaç: *Çalışmanın amacı endoskopist ve patologların üst gastrointestinal mukoza tanıları arasındaki uyumu araştırmak ve endoskopik ve patolojik tanılara göre Helikobakter pilori sıklığını belirlemekdir.* ***Gereç ve Yöntem:*** *Çalışmaya Celal Bayar Üniversitesi Tıp Fakültesi Gastroenteroloji kliniğinde Haziran 2008-Haziran 2010 yılları arasında üst gastrointestinal sistem endoskopisi ve biyopsisi yapılan 1597 olgu retrospektif incelenerek dahil edilmiştir.* ***Bulgular:*** *Endoskopik olarak normal bulunan olguların patolojik olarak normal değerlendirilmesinde özgüllük %86.8, duyarlılık %30.8, pozitif prediktif değer %19.4 ve negatif prediktif değer %92.4, endoskopik olarak gastrit değerlendirilen olguların patolojik olarak da gastrit olarak değerlendirilmesinde özgüllük %30.8, duyarlılık %85.3, pozitif prediktif değer %89.6 ve negatif prediktif değer %23.1, endoskopik olarak malign değerlendirilen olgularda patolojik olarak da malign değerlendirilmede özgüllük %99.1, duyarlılık %96.4, pozitif prediktif değer %84.3 ve negatif prediktif değer %99.8 olarak bulunmuştur. Helikobakter pilori %40 olguda pozitif olarak saptanmıştır.* ***Sonuç:*** *Her ne kadar endoskopistlerin malinite ve gastrit olarak değerlendirdikleri olgular tanı olarak patologlar ile uyumlu olsa da yalnızca bu gruplardan değil mutlaka endoskopik olarak normal nitelendirilen olgulardan da biyopsi alınması önerilir.*

Anahtar kelimeler: *Endoskopik tanı, patolojik tanı, Helikobakter pilori*

INTRODUCTION

Upper gastrointestinal endoscopy is a technique used for direct visualization of the esophagus, stomach and duodenum (1). Gastroenterologists who perform gastrointestinal endoscopies make a provisional diagnosis after the procedure and then perform a biopsy to evaluate the patient histopathologically. Several studies have focused on evaluating the concordance between endoscopic and histopathological diagnoses, but they have generally been focused on specific subjects, for example the endoscopic and histopathological evaluation of gastritis, etc. (2-4). Some studies have shown a consistent relationship between the endoscopic and histopathological diagnoses, while others have suggested that the relationship is of no consequence (5,6). To date, there has been no general comparison between the endoscopic and histopathological diagnoses in adults. Thus, the aim of this study was to evaluate retrospectively the consistency of the diagnoses by endoscopists and pathologists, to determine whether the endoscopic diagnosis is adequate, and to compare the endoscopic and pathological diagnoses of *Helicobacter pylori (Hp).*

MATERIALS AND METHODS

This retrospective study was conducted on patients at Celal Bayar University, Gastroenterology Department, in Manisa, Turkey between January 2008 and January 2010. During this period, 2736 upper gastrointestinal endoscopies were performed. 1597 subjects who underwent both an upper endoscopy and an endoscopic biopsy (antrum and corpus) were included in the study.

Signed consent was obtained from all of the subjects in the endoscopy unit before the endoscopic procedure. After 8-12 hours of fasting, local oropharyngeal sedation was performed using 2% Xylocaine spray, and intravenous midazolam (0.07-0.1 mg/kg) was administered immediately prior to the procedure. A gastroscope with an endoscopic video information system was used in the process of the esophagogastroduodenoscopy (EGD) (NBI system using video endoscopes [GIF-H260; Olympus], video processor [Evis Lucera CV 260 SL; Olympus], and lighting unit [Evis Lucerna CLV 260 SL; Olympus]).

Correspondence: Elmas KASAP
Celal Bayar University, School of Medicine, Department of Gastroenterology, Manisa, Turkey • Phone: + 90 236 233 01 15
Fax: + 90 236 237 02 13 • E-mail: elmaskasap@yahoo.com
Manuscript Received: 20.01.2012 **Accepted:** 07.03.2012

The biopsy specimens were taken from the antrum and gastric body in all patients for histological examination and detection of Hp. Biopsy specimens were fixed in formalin, embedded in paraffin, and stained with a modified toluidine blue solution. Endoscopic gastritis was classified according to the Sydney system (7). Patients who had previously undergone gastric surgery, an upper endoscopy with no biopsy, or an upper endoscopy for upper gastrointestinal bleeding were excluded from this study.

Statistics

Statistical tests were performed using the Statistical Package for the Social Sciences (SPSS) version 15.0. The chi-square test was used to analyze categorical variables, and a value of $p<0.05$ was regarded as significant.

Ethics

The study was carried out with the approval of the Institutional Ethical Review Board of Celal Bayar University Medical Center. The study protocol conforms to the ethical guidelines of the Declaration of Helsinki.

RESULTS

1597 subjects who underwent an upper endoscopy and endoscopic biopsy (antrum and corpus) between January 2008 and January 2010 were included in the study. The study group was comprised of 823 (51%) females and 774 (48%) males. The mean age of the males was 49.72, and the mean age of the females was 48.68. Hp was positive in 653 patients (54% female, 46% male), with 43% of them diagnosed in 2008, 42% in 2009, and 38% in 2010.

Endoscopic and pathological diagnoses are compared in Table 1.

In 149 patients, the gastric body was endoscopically normal, but only 46 (30%) of them were diagnosed as being pathologically normal. There was a poor correlation between the endoscopically normal and pathologically normal cases. The specificity was 86.8%, sensitivity 30.8%, positive predictive value (PPV) 19.4%, and negative predictive value (NPV) 92.4%.

In 1044 patients, there was a diagnosis of some type of endoscopic gastritis, including endoscopic erythematous antral gastritis, alkaline reflux gastritis, atrophic gastritis, erosive gastritis, and pangastritis, and 890 (85%) of them were diagnosed with pathological gastritis, such as chronic nonatrophic gastritis, chronic atrophic gastritis, intestinal metaplasia, chronic atrophic gastritis, and reactive gastritis. The specificity was 30.8% and sensitivity 85.3%, with a PPV of 89.6% and NPV of 23.1%.

The gastric body was endoscopically malignant in 56 patients, and 54 (96%) of those were diagnosed as also being pathologically malignant. The specificity was 99.1% and sensitivity 96.4%, with a PPV of 84.3% and NPV of 99.8%.

Hp (-) was significantly higher than Hp (+) in patients who were pathologically diagnosed with chronic atrophic gastritis, intestinal metaplasia, chronic atrophic gastritis, reactive gastritis, epithelial malignant tumors, low-grade dysplasia, neuroendocrine tumors, or amyloidosis along with patients with celiac disease ($p<0.05$). No difference was found in Hp (+) and (-) patients with chronic nonatrophic gastritis and gastric diffuse non-Hodgkin lymphoma ($p>0.05$). The pathological

Table 1. Endoscopic and pathologic diagnoses

	Endoscopic Diagnosis													
Pathologic Diagnosis	**Normal**	**Endoscopic erythematous antral gastritis**	**Gastric ulcer**	**Bulbar ulcer**	**Gastric cancer**	**Atrophic gastritis**	**Endoscopic bulbitis**	**Bulbar and gastric ulcer**	**Granular antral mucosa**	**Endoscopic erosive bulbitis**	**Erosive gastritis**	**Gastric polyp**	**Pangastritis**	**Total**
Normal	46	141	12	1	0	3	18	1	0	0	7	6	2	237
Chronic nonatrophic gastritis	76	649	59	48	0	16	58	9	6	10	21	35	13	1000
Chronic atrophic gastritis	7	35	5	2	0	3	3	1	2	1	1	1	2	63
Intestinal metaplasia+chronic atrophic gastritis	14	87	8	5	2	8	7	1	6	3	6	12	5	164
Erosive gastritis	6	39	0	5	0	0	5	0	0	0	5	2	0	62
Malignant epithelial tumor	0	2	0	0	49	0	0	0	0	0	0	2	0	53
Low-grade dysplasia	0	5	0	0	1	0	0	0	0	0	0	2	0	8
Neuroendocrine tumor	0	1	1	0	1	0	0	0	0	0	0	0	0	3
Amyloidosis	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Celiac disease	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Gastric diffuse nonhodgkin lymphoma	0	0	0	0	3	0	0	0	0	0	0	0	0	3
Total	149	961	84	60	55	28	90	12	13	13	39	59	34	1597

diagnoses and their relationship with Hp are summarized in Table 2.

Hp (-) was significantly higher than Hp (+) in patients who were diagnosed endoscopically with erythematous endoscopic antral gastritis, gastric cancer and gastric polyps ($p<0.05$). No statistically significant difference was found between Hp (+) and (-) in patients with stomach ulcers, bulbar ulcers, atrophic gastritis, endoscopic bulbitis, or stomach ulcers along with those with bulbous, granular mucosa with antral gastritis or erosive gastritis ($p>0.05$). Hp (+) was significantly higher than Hp (-) in patients with endoscopically shown erosive bulbitis ($p<0.05$). The endoscopic diagnoses and their relationship with Hp are summarized in Table 3.

Table 2. Relationship between *Helicobacter pylori* and pathological diagnosis

Pathological Diagnosis	*Hp* (+)	*Hp* (-)	p
Normal	26	211	p<0.05
Chronic nonatrophic gastritis	525	475	p>0.05
Chronic atrophic gastritis	11	52	p<0.05
Intestinal metaplasia+chronic atrophic gastritis	61	103	p<0.05
Erosive gastritis	15	47	p<0.05
Malignant epithelial tumor	12	41	p<0.05
Low-grade dysplasia	2	6	p<0.05
Neuroendocrine tumor	0	3	p<0.05
Amyloidosis	0	2	p<0.05
Celiac disease	0	2	p<0.05
Gastric diffuse nonhodgkin lymphoma	1	2	p>0.05
Total	653	944	p<0.05

Table 3. Relationship between *Helicobacter pylori* and endoscopic diagnosis

Endoscopic Diagnosis	*Hp* (+)	*Hp* (-)	p
Normal	59	90	p<0.05
Endoscopic erythematous antral gastritis	369	592	p<0.05
Gastric ulcer	37	47	p>0.05
Bulbar ulcer	35	25	p>0.05
Gastric malignancy	15	40	p<0.05
Atrophic gastritis	15	13	p>0.05
Endoscopic bulbitis	39	51	p>0.05
Bulbar and gastric ulcer	7	4	p>0.05
Granuler antral mucosa	8	5	p>0.05
Endoscopic erosive bulbitis	11	3	p<0.05
Erosive gastritis	16	23	p>0.05
Gastric polyp	22	37	p<0.05
Pangastritis	20	14	p>0.05
Total	653	944	p<0.05

DISCUSSION

Diagnostic endoscopy of the upper gastrointestinal tract is relatively developed; nevertheless, whether there is a correlation between the diagnosis of the gastroenterologist and compliance of the histopathologist is still an open question, especially in normal endoscopic diagnoses in the upper gastrointestinal system by the gastroenterologist. A recent study from Turkey showed that 94% of the patients who were diagnosed as having a normal upper gastrointestinal endoscopy were found to have gastritis after the histopathological diagnosis (8). Kaur et al. (9) showed that patients with a normal endoscopy were not necessarily histologically normal, with 50% of the antrum and 37% of the corpus falling into the not-normal category. In our study, only 30% of the subjects with normal endoscopies were found pathologically normal. This ratio was found to be higher than other study results in Turkey but lower than those in the study done by Kaur et al. (9). We think the different results between these studies can be attributed to the experience of the endoscopists or the endoscopy tool used.

The term gastritis is interpreted by clinicians as a complex of symptoms. However, endoscopists describe it as diffuse macroscopic changes in the mucosa accompanied by patchy or complete hyperemia in the mucosa with the mucosal vasculature becoming more visually obvious and/or evidence of impairment of the mucosal integrity (1). Gastritis is also interpreted differently by pathologists, who compare the microscopic appearance (12). In 50% of asymptomatic people and 45% of those with dyspeptic complaints diagnosed histologically, positive gastritis diagnoses were obtained (10). There is not always a close correlation between the microscopic inflammation and the patient's symptoms when compared with the endoscopic images (12). Pathological gastritis is generally evaluated according to the Sydney classification system (11). In our evaluation, 85% of the subjects who were said to have gastritis endoscopically were found to have gastritis pathologically. These results were similar with the other studies from our country (2,8). It was observed that the gastritis diagnoses of the endoscopists were more successful than the normal evaluations.

Although epidemiological studies have shown that the rate of gastric cancers has declined in recent years, it is still the most common tumor of the upper digestive system. The localization, size, extent, and macroscopic view of the gastric cancers are revealed in endoscopy. In biopsies, the histopathological type is detected and the treatment plan is made accordingly (13). However, confirmation of the malignancy is still needed after the endoscopic biopsy is performed. In our study, 56 subjects were suspected of having a gastric malignancy after being examined endoscopically, and the biopsy for 54 of those was reported as positive for gastric malignancy. The remaining two were diagnosed with gastritis. In eight subjects who were thought to have endoscopic erythematous antral gastritis and four of the 59 subjects who had endoscopic polyps, gastric malignancy was detected and identified as likely being

early gastric cancer. These results again emphasize the importance of endoscopic evaluations when assessing the possibility of a gastric tumor.

Hp is a gram-negative, microaerophilic bacterium that settles in various areas of the stomach and duodenum, and it is an important risk factor in the development of gastritis, peptic ulcer disease, and gastric malignancy (14). In our study, 653 (40%) of all patients tested positive for Hp, with 54% of those being female and 46% being male. The ratio of positive patients in Turkey was 40-70% (15), and our study produced compatible results. When we classified our results according to the pathological diagnoses, Hp negative was found to be statistically significantly higher in all diagnoses except for non-Hodgkin's lymphoma and chronic nonatrophic gastritis. When we compared the endoscopic diagnosis and Hp, the negative results were significantly higher than the positive results and showed a pathological correlation with normal erythematous endoscopic antral gastritis, gastric cancer, and gastric polyps.

It is known that many people use a proton pump inhibitor randomly with no prescription, and this is thought to cause false negativity in the detection of Hp. We think that this may have played a role in the high occurrence of Hp-negative patients. As this was a retrospective study and no detailed information about the patients could be obtained (ratio of cigarette smoking, alcohol consumption rate, rate of non-steroidal antiinflammatory drug (NSAID) use, family history, medications used during endoscopy, etc.), this prevented us from performing a more comprehensive analysis. On the other hand, the number of subjects included in this study was quite high (n=1597). Therefore, we think that this study may shed some light on the correlation between endoscopic and pathological diagnoses among patients who undergo endoscopies, and it also provides important information regarding the relationship of these diagnoses with Hp.

In conclusion, although the endoscopic and pathologic diagnoses were compatible, especially when examining malignancy and gastritis, and despite the fact that the endoscopic evaluations of the upper gastrointestinal system were deemed to be normal, a biopsy is still recommended. With further development of endoscopic methods, perhaps the issues discussed in this article will become less important in the future.

REFERENCES

1. Escourrou J, Salcedo J, Buscail L. Upper gastrointestinal endoscopy. In: Classen M, Tytgat GNJ, Lightdale CJ, eds. Gastroenterological endoscopy. New York: Thieme, 2002;113-24.
2. Ibis M, Arhan M, Odemis B, et al. The relation between endoscopically diagnosed gastritis and its histologic findings. Turk J Academic Gastroenterol (Akademik Gastroenteroloji) 2009;8:12-7.
3. Zhang C, Yamada N, Wu YL, et al. Comparison of Helicobacter pylori infection and gastric mucosal histological features of gastric ulcer patients with chronic gastritis patients. World J Gastroenterol 2005;11:976-81.
4. Al Hamdani A, Fayadh HM, Abdul Majeed BA. Helicobacter pylori gastritis: correlation between endoscopic and histological findings. IJGE 2001;1:43-8.
5. Jonsson KA, Gotthard R, Bodemar G, et al. The clinical relevance of endoscopic and histologic inflammation of a gastroduodenal mucosa in dyspepsia of unknown origin. Scand J Gastroenterol 1989;24:385-95.
6. Myren J, Serck-Hanssen A. The gastroscopic diagnosis of gastritis, with particular reference to mucosal reddening and mucus covering. Scand J Gastroenterol 1974;9:457-62.
7. Tytgat GNJ. The Sydney system: endoscopic division. Endoscopic appearances in gastritis/duodenitis. J Gastroenterol Hepatol 1991;6:223-34.
8. Nazligül Y, Ardali HI, Bitiren M, et al. The value of endoscopy in the diagnosis of nonerosive antral gastritis. T Klin J Med Sci 1999;19:215-7.
9. Kaur G, Raj SM. A study of the concordance between endoscopic gastritis and histological gastritis in an area with a low background prevalence of Helicobacter pylori infection. Singapore Med J 2002;43:90-2.
10. Khakoo SI, Lobo AJ, Shepherd NA, et al. Histological assessment of the Sydney classification of endoscopic gastritis. Gut 1994;35:1172-5.
11. Price B. The Sydney system: histological division. J Gastroenterol Hepatol 1991;6:209-22.
12. Göral V. Acute and chronic gastritis. Güncel Gastroenteroloji (Current Gastroenterology) 2006;10(4):292-305.
13. Altın M. Endoscopy, chromoendoscopy and endosonography in the diagnosis of early gastric cancer. Endoskopi Dergisi (Endoscopy Gastrointestinal) 1992;2:44-51.
14. Hopkins RJ, Girardi LS, Turney EA. Relationship between Helicobacter pylori eradication and reduced duodenal and gastric ulcer recurrence: a review. Gastroenterology 1996;110:1244-52.
15. Göral V, Ozdal B, Kaplan A, et al. The prevalence of Helicobacter pylori in the Diyarbakir city. Turk J Academic Gastroenterol (Akademik Gastroenteroloji) 2006;5:47-50.